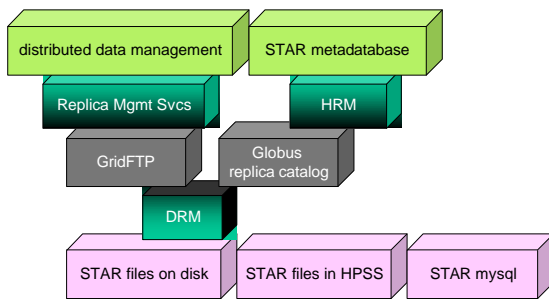# Data Grid Services in STAR, Initial Deployment: Site-to-Site File Replication.*

D. Olson[†], E. Hjort[†], A. Sim[††], J. Yang[†]

The STAR[1] experiment sites at Brookhaven and Berkeley labs, in conjunction with the Storage Resource Management project at LBNL are developing and deploying a data distribution and management service for STAR. The goal of this Particle Physics Data Grid* (PPDG) project activity is to automate and integrate the data transfer between BNL and LBNL (10's of TB per year) with the STAR data management system where the Computer Science focus is on the storage management issues of such an activity. The general architecture being planned/used in PPDG comes from the GriPhyN project and is shown in below.
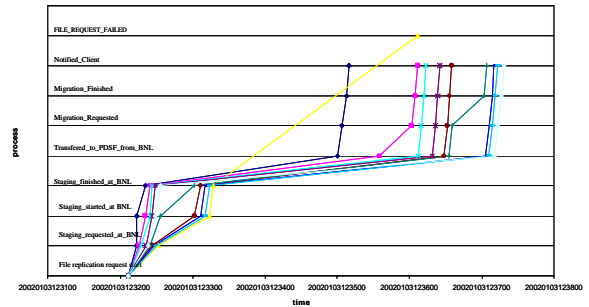
Components

In the model of PPDG project activities, there is a focus of pressing the development and integration of one domain of middleware

components while making use of other stable "near production grade" middleware components from the Computer Science projects participating in PPDG, as they become available. In addition, there are application specific software components (STAR experiment) including in putting together the end-to-end application for this project. The list of components below are those expected to be available during the first year (June 2001 – May 2002). It is expected that standardized components from other activities may replace some of the application specific STAR components in the future.

The chart above illustrates the steps from transferring a number of files from the HPSS system at BNL to the HPSS system at NERSC. In time sequence order these are:
- file replication request
- staging requested from BNL HPSS
- staging started at BNL
- staging finished at BNL, start transfer to NERSC
- finished transfer to NERSC
- request migration to NERSC HPSS
- migration finished to NERSC HPSS
- client notified of completion

These tools are being put into production use for STAR in 2002.

Footnotes and References

* Part of the Particle Physics Data Grid project, http://www.ppdg.net.
† Nuclear Science Division, RNC Program
†† NERSC Division, Scientific Data Managemetn Group
1. http://www.star.bnl.gov
2. Additional references:
http://www.globus.org
http://sdm.lbl.gov/srm